

Jan. 17, 1967

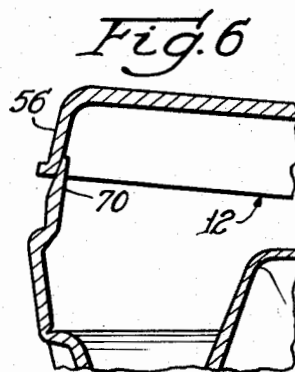
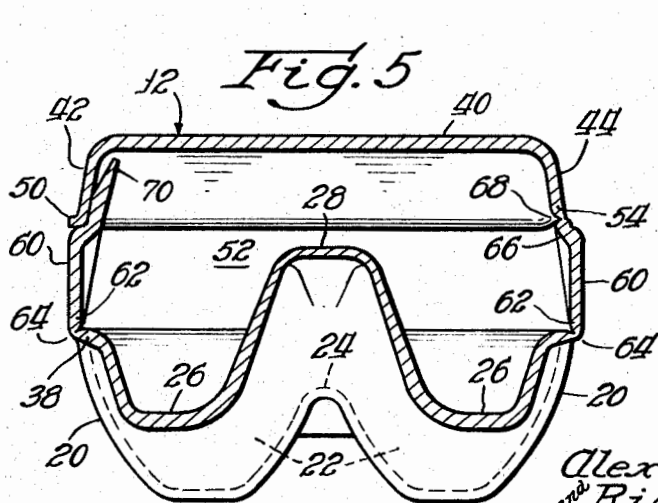
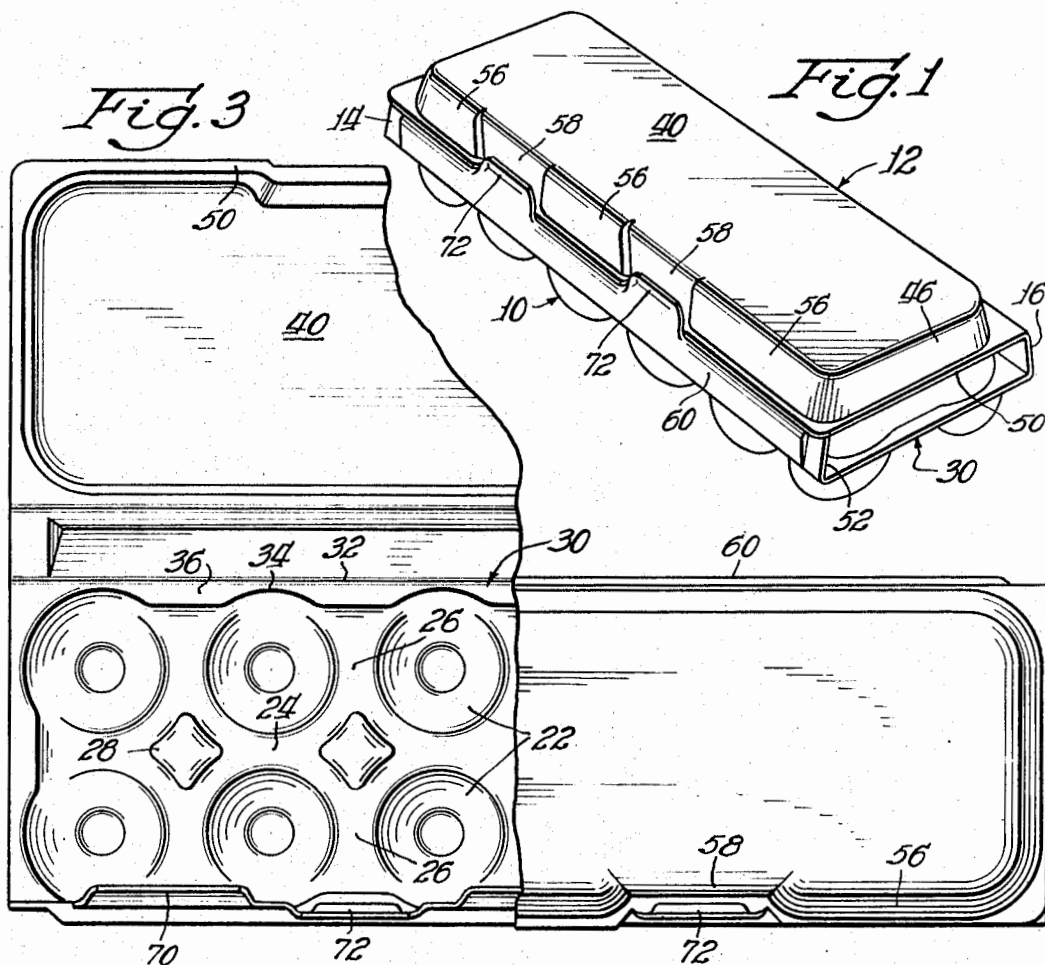
A. G. MAKOWSKI ETAL

3,298,594

EGG CARTON

Filed Aug. 11, 1965

2 Sheets-Sheet 1



Inventors:
Alexander G. Makowski
and Richard T. Walter
By: Richard W. Knapton Att'y.

Jan. 17, 1967

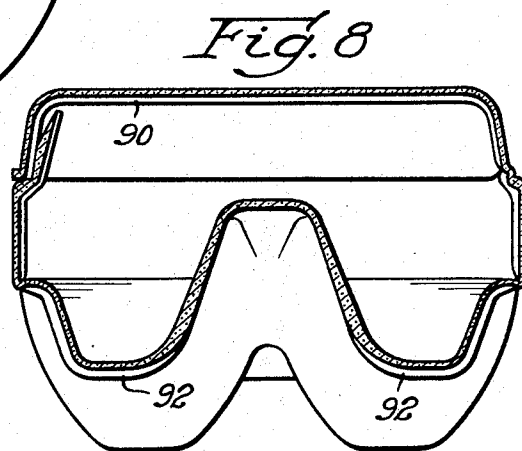
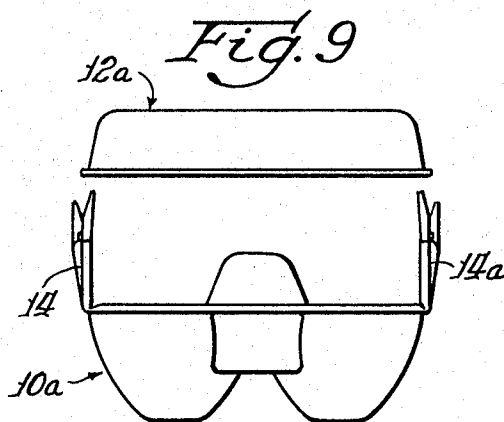
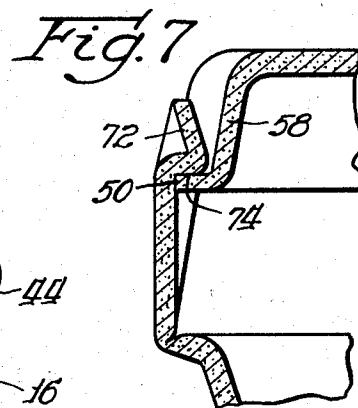
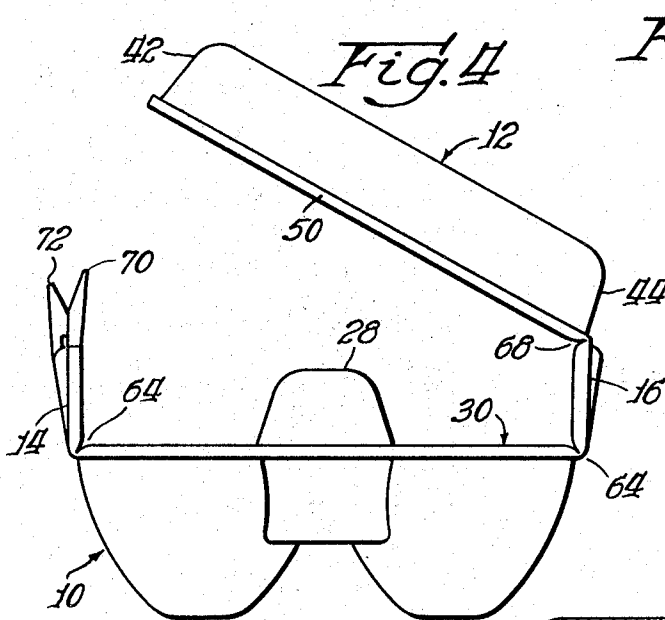
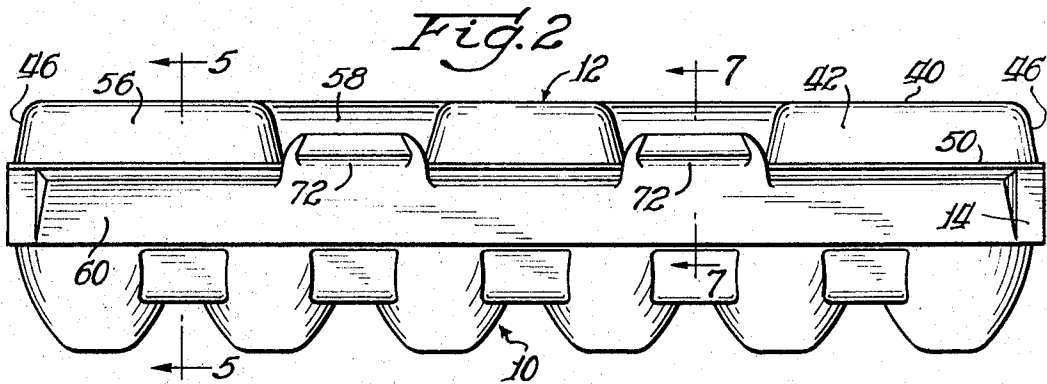
A. G. MAKOWSKI ETAL

3,298,594

EGG CARTON

Filed Aug. 11, 1965

2 Sheets-Sheet 2



Inventors:
Alexander G. Makowski
and Richard T. Walter
By: *Richard W. Carpenter* atty

1

3,298,594

EGG CARTON

Alexander G. Makowski, Berwyn, and Richard T. Walter,
Norristown, Pa., assignors to Container Corporation of
America, Chicago, Ill., a corporation of Delaware
Filed Aug. 11, 1965, Ser. No. 478,851
15 Claims. (Cl. 229-45)

This invention relates to egg cartons and more particularly to a carton formed of molded plastic material and including a tray and hinged cover.

The invention comprehends an improved egg carton having a cover spaced from each other and interconnected by a pair of generally vertical closure walls.

It is an object of the invention to provide, in a carton of the type described, an improved arrangement for interlocking the cover and at least one of the closure walls.

Another object of the invention is the provision, in a carton of the type described of ventilating openings at opposite ends of the carton.

Yet another object of the invention is the provision of a rigid contoured rim for the tray of the carton.

Still another object of the invention is the provision of sloping closure walls with outwardly offset cushions or pads which present vertical outer surfaces.

Another object of the invention is to provide, in a carton of the type described, a two-piece carton with a cover which has both a locking and hinge connection between each of its front and rear edges and a related edge of the carton tray.

A more specific object of the invention is the provision, in a carton of the type described, of a series of inwardly and outwardly offset camming and locking portions on the tray which are alternately spaced from each other longitudinally of the tray in alignment with related camming and locking portions on the cover.

These and other objects of the invention will be apparent from an examination of the following description and drawings, wherein:

FIGURE 1 is a perspective view of an egg carton embodying features of the invention;

FIGURE 2 is a front elevational view of the structure illustrated in FIGURE 1;

FIGURE 3 is a top plan view of the structure illustrated in FIGURE 1, with a portion of the cover shown broken away and in the open position;

FIGURE 4 is an end elevational view of the structure illustrated in FIGURE 1, with a cover shown in the open position;

FIGURE 5 is a transverse vertical section taken on line 5-5 of FIGURE 2;

FIGURE 6 is a view similar to FIGURE 5, but with the cover shown in a partially closed position;

FIGURE 7 is a fragmentary transverse vertical section taken on line 7-7 of FIGURE 2;

FIGURE 8 is a view similar to FIGURE 5, but illustrating a modified form of the invention; and

FIGURE 9 is a view similar to FIGURE 4, but illustrating yet another modified form of the invention.

It will be understood that, for purposes of clarity, certain elements have been intentionally omitted from certain views where they are believed to be illustrated to better advantage in other views.

Referring now to the drawings for a better understanding of the invention, it will be seen that the egg carton is formed from a molded plastic material, such as foamed

2

polystyrene as described in a separate patent application, and is a unitary structure which includes a tray, indicated generally at 10, and a cover, indicated generally at 12, which are interconnected at their front and rear by a pair of front and rear closure walls 14 and 16, respectively.

Tray 10 includes a plurality of generally vertically disposed side walls 20 which are contoured to form a plurality of egg receiving pockets or cells 22 arranged in two parallel rows extending longitudinally of the carton. Pockets 22 are interconnected by a central longitudinal partition 24 and plurality of transverse partitions 26. At the junctures of the longitudinal and transverse partitions, between each group of four pockets, there is provided an integrally formed cushioning post 28 which extends vertically above the upper extremities of the tray side walls 20.

Formed integrally with and extending outwardly from the upper and outer edges of the tray side walls 20 is a generally rectangular, relatively narrow, horizontal flange or tray rim, indicated generally at 30, which is provided with straight outer side edges 32 and inner side edges which are contoured to provide concave portions 34 adjacent the pockets of the tray and straight sections 36 of greater width or thickness in the areas between adjacent pockets. Also, it should be noted that neither the longitudinal nor transverse partitions extend up to the tray rim. By not having a full height transverse and by having a heavier or wider rim section between the pockets the carton is reinforced in such a way as to prevent or minimize the possibility of its collapsing in an accordion-like manner such as frequently happened with conventional egg cartons.

The tray cover 12 includes a flat, generally rectangular, horizontal top wall 40 having depending therefrom an opposed pair of front and rear side walls 42 and 44, respectively, and an opposed pair of end walls 46 which are formed integrally with the top wall and with each other to provide a dome-like structure open at the bottom. In order to afford additional rigidity, the front, rear and end walls of the cover preferably slope downwardly and outwardly from the cover top wall.

Formed integrally with and extending outwardly from the lower edges of the cover front, rear and end walls is a generally rectangular, relatively narrow, horizontal flange or cover rim, indicated generally at 50. As best seen in FIGURE 1 the ends of the cover and tray rims are spaced vertically from each other to provide therebetween openings 52 at opposite ends of the carton which permit air to pass through the carton to ventilate the contents thereof.

As best seen in FIGURES 1 and 2 the cover front wall is provided with outwardly and inwardly offset camming and locking sections 56 and 58, respectively, which are alternately spaced from each other longitudinally of the carton for cooperation with camming and locking portions of the tray, in a manner described later in the specification.

As best seen in FIGURE 4, the closure and hinge walls 14 and 16, respectively, which interconnect the tray and cover are vertically disposed and are inclined to slope upwardly and inwardly from the tray rim toward the cover rim. However, each of these walls is provided on its outer surface with a raised or embossed cushion portion 60 which extends throughout the greater portion of the length of the walls and which presents a flat outwardly

3

facing vertical surface. The function of this arrangement is to permit the hinge and closure walls to slope, for purposes of rigidity, and, at the same time, provide a vertical outer surface for engagement with a similar surface on an adjacent carton when a plurality of cartons are packaged in a shipping container. The vertical surfaces on adjacent cartons permit them to be packed snugly against one another to prevent shifting, within a shipping container; also, the cushions serve to absorb lateral shocks which the cartons may be subjected to in handling or shipping.

Both closure walls are tapered at their lower edges as at 62 where they are hinged at 64 to the front and rear edges of the tray rim; rear closure wall 16 is also tapered at its upper edge, as at 65, where it is hinged at 68 to the rear edge of the cover rim. The hinge connections are all integrally formed in the molding process in a manner described in a separate patent application and permit a one piece structure with integrally formed hinges which are strong and durable.

Projecting upwardly from the upper edge of front closure wall 14 are a plurality of camming and locking tabs 70 and 72, respectively, which are alternately spaced from each other longitudinally of the carton in vertical alignment with the related camming and locking portions 56 and 58, respectively, of the cover front wall. As best seen in FIGURE 7, locking tabs 72 are provided with inwardly offset shoulders or abutments 74 which are engageable with the upper surface of portions of the tray trim front edge, when the carton is in locked condition, to maintain the cover and tray in engagement with each other.

As best seen in FIGURE 5, the front and rear edges of the tray rim and the rear edge of the cover rim are tapered, as at 38 and 54, respectively, and the lower edges of both closure walls and the upper edge of the rear closure wall are tapered, as at 62 and 68, respectively. The angle of taper is slightly less than would be expected to permit free hinge action upon closing the carton. In fact the angle of taper is so calculated and arranged in such a manner that it requires a slight degree of pressure to close the carton. In this manner compression is created at the abutting edges of hinged members and the hinge joints are placed under tension to provide additional rigidity for the carton when it is in the closed and locked position.

Turning now to FIGURE 8, it will be seen that a modified form of the invention is shown. The carton illustrated in FIGURE 8 is basically the same as the carton illustrated in the other views except that, midway between the ends of the carton, there is provided on the inside surface of the cover and on the outside surface of the tray a pair of grooves or score lines 90 and 92, respectively, which serve as lines of weakness for separation when it is desired to break the carton into two separate sections. By providing the weakened line of separation in the underneath side of the cover and the underneath side of the tray accidental separation is prevented when the ends of the carton are lifted, and the only manner of separating the carton is to press downwardly at the opposite ends of the carton.

Turning now to FIGURE 9 it will be seen that yet another form of the invention is illustrated. In this embodiment the arrangement is substantially the same as in the previously described embodiments except that the rear closure wall has been replaced by a closure wall identical to the front closure wall. Inasmuch as both of the closure walls are hinged to the front and rear edges of the tray rim when locked in position either may function in exactly the same manner as a hinge wall. Thus, the carton may be opened from either the front or the rear, and, if opened from the front, the rear edge of the cover will remain in position attached to the rear closure wall and may be hinged about its locked connection thereto. Likewise the carton may be opened in the

4

opposite direction. The purpose of this arrangement, however, it is not to permit the carton to be opened from the front or the rear but to permit the use of a separate cover where desired. This is advantageous where it is desired to provide similar trays with covers to be used which are printed in different forms. For instance, a particular egg producer could have a common tray for all of its products and have one set of covers printed Grade A and another Grade B and another Grade C and this arrangement would afford complete interchangeability.

What is claimed is:

1. A unitary egg carton having a tray and a reclosable hinged cover formed from moldable, plastic material comprising, in combination:

(a) a tray including:

- (i) a plurality of contoured walls defining egg receiving pockets open at the top and arranged in two parallel rows;
- (ii) said walls having adjacent edges interconnected by integrally formed partitions extending longitudinally and transversely of the tray;
- (iii) a generally rectangular, relatively narrow, horizontal rim formed integrally with upper edges of said walls;
- (iv) a plurality of cushioning posts formed integrally with the longitudinal and transverse partitions, at the junctures thereof between adjacent pockets, and extending above said tray rim;

(b) a pair of relatively narrow, elongated, vertically disposed, front and rear closure and hinge walls hinged at their lower edges to the front and rear edges, respectively, of said tray rim;

(c) a cover including:

- (i) a flat top wall having opposed, vertical, front and rear walls and end walls sloping downwardly and outwardly therefrom to provide a hollow structure open at the bottom;
- (ii) a generally rectangular, relatively narrow horizontal rim formed integrally with lower edges of said cover vertical walls;

(d) said cover rim being hinged at its rear edge to an upper edge of said hinge wall;

(e) said cover front wall having longitudinally spaced, camming and locking portions offset laterally outwardly and inwardly from each other;

(f) said closure wall having longitudinally spaced camming and locking tabs projecting upwardly therefrom and offset laterally inwardly and outwardly from each other in alignment with outwardly and inwardly offset portions, respectively, of said cover front wall;

(g) said locking tabs having inwardly projecting shoulders presenting downwardly facing abutments engageable with front portions of said cover rim;

(h) said cover and tray rims having end portions spaced vertically from each other to define therebetween ventilating openings at opposite ends of the carton;

(i) said closure and hinge walls sloping upwardly and inwardly and having outwardly offset portions presenting generally flat, vertical, outer surfaces which extend for the major part of the length of said closure and hinge walls.

2. A unitary egg carton having a tray and a reclosable hinged cover formed from moldable, plastic material comprising, in combination:

(a) a tray including:

- (i) a plurality of contoured walls defining egg receiving pockets open at the top and arranged in two parallel rows;
- (ii) said walls having adjacent edges interconnected by integrally formed partitions extending longitudinally and transversely of the tray;
- (iii) a generally rectangular, relatively narrow, horizontal rim formed integrally with upper edges of said walls;

5

- (iv) a plurality of cushioning posts formed integrally with the longitudinal and transverse partitions, at the junctures thereof between adjacent pockets, and extending above said tray rim;
- (b) a pair of relatively narrow, elongated, vertically disposed, front and rear closure and hinge walls hinged at their lower edges to the front and rear edges, respectively, of said tray rim;
- (c) a cover including:
 - (i) a flat top wall having opposed, vertical, front and rear walls and end walls sloping downwardly and outwardly therefrom to provide a hollow structure open at the bottom;
 - (ii) a generally rectangular, relatively narrow horizontal rim formed integrally with lower edges of said cover vertical walls;
- (d) said cover rim being hinged at its rear edge to an upper edge of said hinge wall;
- (e) said cover front wall having longitudinally spaced, camming and locking portions offset laterally outwardly and inwardly from each other;
- (f) said closure wall having longitudinally spaced camming and locking tabs projecting upwardly therefrom and offset laterally inwardly and outwardly from each other in alignment with outwardly and inwardly offset portions, respectively, of said cover front wall;
- (g) said locking tabs having inwardly projecting shoulders presenting downwardly facing abutments engageable with front portions of said cover rim;
- (h) said cover and tray rims having end portions spaced vertically from each other to define therebetween ventilating openings at opposite ends of the carton.

3. A unitary egg carton having a tray and a reclosable hinged cover formed from moldable, plastic material comprising, in combination:

- (a) a tray including:
 - (i) a plurality of contoured walls defining egg receiving pockets open at the top and arranged in two parallel rows;
 - (ii) said walls having adjacent edges interconnected by integrally formed partitions extending longitudinally and transversely of the tray;
 - (iii) a generally rectangular, relatively narrow, horizontal rim formed integrally with upper edges of said walls;
 - (iv) a plurality of cushioning posts formed integrally with the longitudinal and transverse partitions, at the junctures thereof between adjacent pockets, and extending above said tray rim;
- (b) a pair of relatively narrow, elongated, vertically disposed, front and rear closure and hinge walls hinged at their lower edges to the front and rear edges, respectively, of said tray rim;
- (c) a cover including:
 - (i) a flat top wall having opposed, vertical, front and rear walls and end walls sloping downwardly and outwardly therefrom to provide a hollow structure open at the bottom;
 - (ii) a generally rectangular, relatively narrow horizontal rim formed integrally with lower edges of said cover vertical walls;
- (d) said cover rim being hinged at its rear edge to an upper edge of said hinge wall;
- (e) said cover front wall having longitudinally spaced, camming and locking portions offset laterally outwardly and inwardly from each other;
- (f) said closure wall having longitudinally spaced camming and locking tabs projecting upwardly therefrom and offset laterally inwardly and outwardly from each other in alignment with outwardly and inwardly offset portions, respectively, of said cover front wall;
- (g) said locking tabs having inwardly projecting shoulders

6

ders presenting downwardly facing abutments engageable with front portions of said cover rim;

- (h) said closure and hinge walls sloping upwardly and inwardly and having outwardly offset portions presenting generally flat, vertical, outer surfaces which extend for the major part of the length of said closure and hinge walls.
- 4. A unitary egg carton having a tray and a reclosable hinged cover formed from moldable, plastic material comprising, in combination:
 - (a) a tray including:
 - (i) a plurality of contoured walls defining egg receiving pockets open at the top and arranged in two parallel rows;
 - (ii) said walls having adjacent edges interconnected by integrally formed partitions extending longitudinally and transversely of the tray;
 - (iii) a generally rectangular, relatively narrow, horizontal rim formed integrally with upper edges of said walls;
 - (iv) a plurality of cushioning posts formed integrally with the longitudinal and transverse partitions, at the junctures thereof between adjacent pockets, and extending above said tray rim;
 - (b) a pair of relatively narrow, elongated, vertically disposed, front and rear closure and hinge walls hinged at their lower edges to the front and rear edges, respectively, of said tray rim;
 - (c) a cover including:
 - (i) a flat top wall having opposed, vertical, front and rear walls and end walls extending downwardly therefrom to provide a hollow structure open at the bottom;
 - (ii) a generally rectangular, relatively narrow horizontal rim formed integrally with lower edges of said cover vertical walls;
 - (d) said cover rim being hinged at its rear edge to an upper edge of said hinge wall;
 - (e) said cover front wall having longitudinally spaced, camming and locking portions offset laterally outwardly and inwardly from each other;
 - (f) said closure wall having longitudinally spaced camming and locking tabs projecting upwardly therefrom and offset laterally inwardly and outwardly from each other in alignment with outwardly and inwardly offset portions, respectively, of said cover front wall;
 - (g) said locking tabs having inwardly projecting shoulders presenting downwardly facing abutments engageable with front portions of said cover rim.
- 5. A unitary egg carton having a tray and a reclosable hinged cover comprising, in combination:
 - (a) a tray including:
 - (i) a plurality of contoured walls defining egg receiving pockets open at the top and arranged in two parallel rows;
 - (ii) a generally rectangular, relatively narrow, horizontal rim formed integrally with upper edges of said walls;
 - (b) a pair of relatively narrow, elongated, vertically disposed, front and rear closure and hinge walls hinged at their lower edges to the front and rear edges, respectively, of said tray rim;
 - (c) a cover including:
 - (i) a flat top wall having opposed, vertical, front and rear walls and end walls extending downwardly therefrom to provide a hollow structure open at the bottom;
 - (ii) a generally rectangular, relatively narrow horizontal rim formed integrally with lower edges of said cover vertical walls;
 - (d) said cover rim being hinged at its rear edge to an upper edge of said hinge wall;
 - (e) said cover front wall having longitudinally spaced, camming and locking portions offset laterally outwardly and inwardly from each other;

7

- (f) said closure wall having longitudinally spaced camming and locking tabs projecting upwardly therefrom and offset laterally inwardly and outwardly from each other in alignment with outwardly and inwardly offset portions, respectively, of said cover front wall; 5
- (g) said locking tab having an inwardly projecting shoulder presenting a downwardly facing abutment engageable with a front portion of said cover rim.
6. An egg carton having a tray and a reclosable hinged cover formed from moldable, plastic material comprising, in combination: 10
- (a) a tray including:
- (i) a plurality of contoured walls defining egg receiving pockets open at the top and arranged in two parallel rows; 15
- (ii) said walls having adjacent edges interconnected by integrally formed partitions extending longitudinally and transversely of the tray;
- (iii) a generally rectangular, relatively narrow, horizontal rim formed integrally with upper edges of said walls; 20
- (iv) a plurality of cushioning posts formed integrally with the longitudinal and transverse partitions, at the junctures thereof between adjacent pockets, and extending above said tray rim; 25
- (b) a pair of relatively narrow, elongated, vertically disposed, front and rear closure walls hinged at their lower edges to the front and rear edges, respectively, of said tray rim;
- (c) a cover including:
- (i) a flat top wall having opposed, vertical, front and rear side walls and end walls extending downwardly therefrom to provide a hollow structure open at the bottom; 30
- (ii) a generally rectangular, relatively narrow horizontal rim formed integrally with lower edges of said cover vertical walls;
- (d) at least one of said cover side walls having longitudinally spaced, camming and locking portions offset laterally outwardly and inwardly from each other; 40
- (e) at least one of said closure walls having longitudinally spaced camming and locking tabs projecting upwardly therefrom and offset laterally inwardly and outwardly from each other in alignment with outwardly and inwardly offset portions, respectively, of said one cover side wall; 45
- (f) said locking tabs having inwardly projecting shoulders presenting downwardly facing abutments engageable with adjacent portions of said cover rim; 50
- (g) means interconnecting the other of said cover side walls and the other of said closure walls.
7. An egg carton having a tray and a reclosable cover comprising, in combination:
- (a) a tray including: 55
- (i) a plurality of contoured walls defining egg receiving pockets open at the top and arranged in two parallel rows;
- (ii) a generally rectangular, relatively narrow, horizontal rim formed integrally with upper edges of said walls; 60
- (b) a pair of relatively narrow, elongated, vertically disposed, front and rear closure walls hinged at their lower edges to the front and rear edges, respectively, of said tray rim; 65
- (c) a cover including:
- (i) a flat top wall having opposed, vertical, front and rear side walls and end walls extending downwardly therefrom to provide a hollow structure open at the bottom; 70
- (ii) a generally rectangular, relatively narrow horizontal rim formed integrally with lower edges of said cover vertical walls;
- (d) at least one of said cover side walls having longitudinally spaced, camming and locking portions off- 75

8

- set laterally outwardly and inwardly from each other;
- (e) at least one of said closure walls having longitudinally spaced camming and locking tabs projecting upwardly therefrom and offset laterally inwardly and outwardly from each other in alignment with outwardly and inwardly offset portions, respectively, of said one cover side wall;
- (f) said locking tab having an inwardly projecting shoulder presenting a downwardly facing abutment engageable with an adjacent portion of said cover rim;
- (g) means hingedly interconnecting the other of said cover side walls and the other of said closure walls.
8. An egg carton according to claim 5, wherein the adjacent rim and closure wall edges are tapered at the hinge connection therebetween, and wherein the angle of taper is such that the abutting tapered edges are placed under compression and the hinged connection is placed under tension when the carton cover is in closed position.
9. An egg carton according to claim 5, wherein said tray rim is relatively narrow and presents a concave inside edge in the area of each pocket, and wherein the cover rim is wider in the area between each adjacent pair of pockets.
10. An egg carton according to claim 5, wherein the underside of the cover and tray present transverse grooves located midway between and parallel to the ends of the carton and in alignment with each other to facilitate separation of the carton into separate sections.
11. An egg carton according to claim 6, wherein said carton tray and cover are completely detachable from each other, and wherein the front and rear side walls of the cover are similar and wherein the front and rear closure walls are similar.
12. An egg carton having a tray and a reclosable cover comprising, in combination:
- (a) a tray;
- (b) a pair of relatively narrow, elongated, vertically disposed, front and rear closure walls hinged at their lower edges to the front and rear edges, respectively, of said tray;
- (c) a cover including a flat top wall having opposed, vertical, front and rear side walls and end walls extending downwardly therefrom to provide a hollow structure open at the bottom;
- (d) at least one of said cover side walls having longitudinally spaced, camming and locking portions offset laterally outwardly and inwardly from each other;
- (e) at least one of said closure walls having longitudinally spaced camming and locking tabs projecting upwardly therefrom and offset laterally inwardly and outwardly from each other in alignment with outwardly and inwardly offset portions, respectively, of said one cover side wall;
- (f) said locking tab having an inwardly projecting shoulder presenting a downwardly facing abutment engageable with an adjacent portion of said cover;
- (g) means hingedly interconnecting the other of said cover side walls and the other of said closure walls.
13. An egg carton having a tray and a reclosable cover comprising, in combination:
- (a) a tray;
- (b) a cover;
- (c) said cover having at one side thereof longitudinally spaced, camming and locking portions offset laterally outwardly and inwardly from each other;
- (d) said tray having at one side thereof longitudinally spaced camming and locking tabs projecting upwardly therefrom and offset laterally inwardly and outwardly from each other in alignment with outwardly and inwardly offset portions, respectively, of said cover;
- (e) said locking tab having an inwardly projecting

9

shoulder presenting a downwardly facing abutment engageable with an adjacent portion of said cover;
(f) means hingedly interconnecting the other side of said cover and the other side of said tray.

14. An egg carton having a tray and reclosable cover 5 comprising, in combination:

- (a) a hollow tray open at the top;
- (b) a hollow cover open at the bottom and spaced above said tray;
- (c) a pair of opposed, vertically disposed, elongated 10 closure panels interconnecting said cover and tray;
- (d) said closure panels being hinged at their lower edges to upper edges of said tray;
- (e) at least one of said closure panels having its upper 15 edge detachably connected to a lower edge of said cover;
- (f) means hingedly interconnecting the upper edge of the other closure wall and another lower edge of said cover.

15. An egg carton according to claim 14, wherein the 20

10

cover and tray have end portions separated and spaced from each other to provide end openings for ventilating the interior of the carton.

References Cited by the Examiner

UNITED STATES PATENTS

2,529,140	11/1950	Cox	229—45
2,575,192	11/1951	Shepard	229—2.5
2,764,308	9/1956	Hoch	220—4
3,034,693	5/1962	Cox	229—45
3,145,895	8/1964	Reifers	229—29
3,258,187	6/1966	Greatman	229—2.5
3,259,294	2/1966	Hartmann	229—45

FOREIGN PATENTS

925,595	5/1963	Great Britain.
---------	--------	----------------

JOSEPH R. LECLAIR, *Primary Examiner.*

DAVIS T. MOORHEAD, *Examiner.*